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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/781,305	02/13/2001	Toshihiko Miyazaki	35.C15124	6389

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER	
DONG, DALEI	

ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 04/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/781,305	MIYAZAKI ET AL.
	Examiner	**Art Unit**
	Dalei Dong	2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _13 February 2001_ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-109_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-109_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _13 February 2001_ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. _09/781,305_ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the load lock disposed between the getter processing chamber and the sealing process chamber; the second substrate has an envelope fixedly disposed around the second substrate and a spacer fixedly disposed inside the substrate must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,433,639 to Zahuta in view of U.S. Patent No. 6,004,181 to Robinson.

Regarding to claims 1-20, Zahuta discloses in Figure 3, "a processing system 90 is provided. The processing system 90 includes multiple vacuum chambers which are discussed in terms of their functions. A first vacuum chamber 92 is provided, numeral 62. The parts and subassemblies are placed or loaded into the first vacuum chamber 92, numeral 64, and the first vacuum chamber is sealed and evacuated using a vacuum pump, numeral 66" (column 5, line 3-10).

Zahuta also discloses in Figure 3, "as a separate operation, preferably conducted in parallel with the preceding steps, the non-evaporative getter 50 for the dewar is placed, numeral 70, into a second vacuum chamber 110 that interconnects to the assembly chamber 108 through a fifth vacuum lock 112. The second vacuum chamber 110 is evacuated, numeral 72. The getter material is activated, numeral 74, by heating the getter material to a temperature of up to about 900.degree. C. for 10 minutes using electrodes, resistive heaters, radio frequency induction heaters, or other operable heating device.

After completion of the activating, the getter material is moved to the assembly chamber 108 through the fifth vacuum lock 112 (heat shielding member)" (column 6, line 8-20).

Zahuta further discloses in Figure 3, "in the assembly chamber 108, the parts, subassemblies, and getter are assembled together, numeral 76. Assembly may be accomplished by any of a variety of techniques, including for example robotic assembly, other fully or partially automated assembly, or manual assembly as by using manipulators. The assembly is moved to a vacuum joining chamber 114 through a sixth vacuum lock 116 (load lock)" (column 6, line 21-28).

Zahuta further yet discloses in Figure 3, "in the vacuum joining chamber 114, the assembled components are joined permanently or semipermanently using any appropriate technique, numeral 78. Examples of joining techniques include a metal gasket placed between the components, an O-ring gasket placed between the components, cold metal welding of the components, electron beam welding, and laser welding. FIG. 2 shows only a single assembly chamber 108 and a single joining chamber 114, but there could be others as appropriate for the particular type of dewar assembly. For example, it might be appropriate to electron beam weld two particular components together, so a first joining chamber could be provided with an electron beam welder. Two other components might be more properly joined using laser welding, and a second joining chamber would be provided with a laser welder. The various parts and subassemblies to be joined would be moved to the appropriate joining chambers" (column 6, line 29-46).

However, Zahuta does not disclose a first substrate on which phosphor exciting means is disposed. Robinson teaches, "the face plate 2 is the element containing

phosphorus which emits light when struck by electrons. It is also understood that the substrate comprises the emitters and the extraction gates even though they are not shown. The seal ring 4 is shaped such that it will match up with the border of the face plate and substrate. It will be appreciated that the seal ring 4 can take any form such as circular or rectangular, as long as the seal ring 4 matches the shape of the face plate 2 and the substrate 6. Thus, when the face plate 2 is lowered and the substrate 6 raised with sufficient pressure to ensure uniform adhesion to the face plate and substrate 6 by the seal ring 4, a volume is formed bordered by the walls of the seal ring 4, the face plate 2, and the substrate 6" (column 2, line 54-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilize the phosphor containing faceplate and the emitter containing substrate of Robinson for the dewar process of Zahuta in order to increased the high vacuum for the device and improve the efficiency of the electron emitted and thus improve the overall performance and prolong the lifetime of the device.

Regarding to claims 21-38, Zahuta discloses in Figure 3, "a processing system 90 is provided. The processing system 90 includes multiple vacuum chambers which are discussed in terms of their functions. A first vacuum chamber 92 is provided, numeral 62. The parts and subassemblies are placed or loaded into the first vacuum chamber 92, numeral 64, and the first vacuum chamber is sealed and evacuated using a vacuum pump, numeral 66" (column 5, line 3-10).

Zahuta also discloses in Figure 3, "After cleaning, many of the parts and components are baked in vacuum, numeral 69, in the third subchamber 98. The bakeout temperature is typically up to about 250.degree. C. In this case, only a single bakeout subchamber 98 is shown, but there could be additional such subchambers. The bakeout removes additional adsorbed contaminants from the surfaces of the parts and components. After bakeout is complete, the parts and components are moved to the assembly chamber 108" (column 5, line 63-68 to column 6, line 1-3).

Zahuta further discloses in Figure 3, "in the assembly chamber 108, the parts, subassemblies, and getter are assembled together, numeral 76. Assembly may be accomplished by any of a variety of techniques, including for example robotic assembly, other fully or partially automated assembly, or manual assembly as by using manipulators. The assembly is moved to a vacuum joining chamber 114 through a sixth vacuum lock 116 (load lock)" (column 6, line 21-28).

Zahuta further yet discloses in Figure 3, "in the vacuum joining chamber 114, the assembled components are joined permanently or semipermanently using any appropriate technique, numeral 78. Examples of joining techniques include a metal gasket placed between the components, an O-ring gasket placed between the components, cold metal welding of the components, electron beam welding, and laser welding. FIG. 2 shows only a single assembly chamber 108 and a single joining chamber 114, but there could be others as appropriate for the particular type of dewar assembly. For example, it might be appropriate to electron beam weld two particular components together, so a first joining chamber could be provided with an electron beam welder. Two other components might

be more properly joined using laser welding, and a second joining chamber would be provided with a laser welder. The various parts and subassemblies to be joined would be moved to the appropriate joining chambers" (column 6, line 29-46).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilize the phosphor containing faceplate and the emitter containing substrate of Robinson for the dewar process of Zahuta in order to increased the high vacuum for the device and improve the efficiency of the electron emitted and thus improve the overall performance and prolong the lifetime of the device.

Regarding to claims 39-58, Zahuta discloses in Figure 3, "a processing system 90 is provided. The processing system 90 includes multiple vacuum chambers which are

discussed in terms of their functions. A first vacuum chamber 92 is provided, numeral 62. The parts and subassemblies are placed or loaded into the first vacuum chamber 92, numeral 64, and the first vacuum chamber is sealed and evacuated using a vacuum pump, numeral 66" (column 5, line 3-10).

Zahuta also discloses in Figure 3, "after cleaning, many of the parts and components are baked in vacuum, numeral 69, in the third subchamber 98. The bakeout temperature is typically up to about 250.degree. C. In this case, only a single bakeout subchamber 98 is shown, but there could be additional such subchambers. The bakeout removes additional adsorbed contaminants from the surfaces of the parts and components. After bakeout is complete, the parts and components are moved to the assembly chamber 108" (column 5, line 63-68 to column 6, line 1-3).

Zahuta further discloses in Figure 3, "as a separate operation, preferably conducted in parallel with the preceding steps, the non-evaporative getter 50 for the dewar is placed, numeral 70, into a second vacuum chamber 110 that interconnects to the assembly chamber 108 through a fifth vacuum lock 112. The second vacuum chamber 110 is evacuated, numeral 72. The getter material is activated, numeral 74, by heating the getter material to a temperature of up to about 900.degree. C. for 10 minutes using electrodes, resistive heaters, radio frequency induction heaters, or other operable heating device. After completion of the activating, the getter material is moved to the assembly chamber 108 through the fifth vacuum lock 112 (heat shielding member)" (column 6, line 8-20).

Zahuta further yet discloses in Figure 3, "in the assembly chamber 108, the parts, subassemblies, and getter are assembled together, numeral 76. Assembly may be accomplished by any of a variety of techniques, including for example robotic assembly, other fully or partially automated assembly, or manual assembly as by using manipulators. The assembly is moved to a vacuum joining chamber 114 through a sixth vacuum lock 116 (load lock)" (column 6, line 21-28).

Zahuta further yet discloses in Figure 3, "in the vacuum joining chamber 114, the assembled components are joined permanently or semipermanently using any appropriate technique, numeral 78. Examples of joining techniques include a metal gasket placed between the components, an O-ring gasket placed between the components, cold metal welding of the components, electron beam welding, and laser welding. FIG. 2 shows only a single assembly chamber 108 and a single joining chamber 114, but there could be others as appropriate for the particular type of dewar assembly. For example, it might be appropriate to electron beam weld two particular components together, so a first joining chamber could be provided with an electron beam welder. Two other components might be more properly joined using laser welding, and a second joining chamber would be provided with a laser welder. The various parts and subassemblies to be joined would be moved to the appropriate joining chambers" (column 6, line 29-46).

However, Zahuta does not disclose a first substrate on which phosphor exciting means is disposed. Robinson teaches, "the face plate 2 is the element containing phosphorus which emits light when struck by electrons. It is also understood that the substrate comprises the emitters and the extraction gates even though they are not shown.

The seal ring 4 is shaped such that it will match up with the border of the face plate and substrate. It will be appreciated that the seal ring 4 can take any form such as circular or rectangular, as long as the seal ring 4 matches the shape of the face plate 2 and the substrate 6. Thus, when the face plate 2 is lowered and the substrate 6 raised with sufficient pressure to ensure uniform adhesion to the face plate and substrate 6 by the seal ring 4, a volume is formed bordered by the walls of the seal ring 4, the face plate 2, and the substrate 6" (column 2, line 54-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilize the phosphor containing faceplate and the emitter containing substrate of Robinson for the dewar process of Zahuta in order to increased the high vacuum for the device and improve the efficiency of the electron emitted and thus improve the overall performance and prolong the lifetime of the device.

Regarding to claims 59-78, Zahuta discloses in Figure 3, "A gas-tight first vacuum lock 100 provides external access to the first vacuum chamber 92. A gas-tight second vacuum lock 102 separates the first sub chamber 94 from the second subchamber 96. A gas-tight third vacuum lock 104 separates the second subchamber 96 from the third subchamber 98. A gas-tight fourth vacuum lock 106 separates the third subchamber 98 from an evacuated assembly chamber 108. The fourth vacuum lock 106 thus provides external access to the first vacuum chamber 92 at the end opposite the first vacuum lock 100" (column 5, line 23-33).

Zahuta also discloses in Figure 3, "each of the subchambers can be isolated from the other subchambers, the external environment, and the downstream assembly chamber. Each subchamber can therefore be evacuated separately from the others. An important advantage of this process is the capability to prevent contaminants produced during the processing in one of the subchambers to reach the other subchambers" (column 5, line 34-41).

Zahuta further discloses in Figure 3, "contaminants are removed from the parts and subassemblies, numeral 68. In the illustrated processing system 90, two cleaning stages are provided for illustration. There may be multiple cleaning stages because some parts and subassemblies may require different cleaning than other parts and subassemblies, and the present approach gives complete flexibility in this regard. Examples of types of cleaning operations that may be used in vacuum include plasma glow discharge cleaning, ultraviolet photon stimulated desorption, infrared heating, ultraviolet cleaning, and ion bombardment, all of which are known in the art. Again by way of example, the first sub chamber 94 might be provided with the apparatus for performing ultraviolet cleaning and the second subchamber 96 might be provided with the apparatus for performing ion bombardment. Some parts or subassemblies might be most effectively cleaned by one process but should not be exposed to the other. In these cases, the parts or subassemblies are loaded into the cleaning subchamber 94 or 96 that is appropriate for it" (column 5, line 42-62).

However, Zahuta does not disclose a second getter-processing chamber. It would have been obvious to one of ordinary skill in the art at the time the invention was made to

have add another getter processing chamber in order to further remove the contaminants from parts and subassemblies and to accommodate the needs and requirement of different gettering process of different parts and subassemblies.

Regarding to 79-84 and 100-101, Zahuta discloses in Figure 3, "a processing system 90 is provided. The processing system 90 includes multiple vacuum chambers which are discussed in terms of their functions. A first vacuum chamber 92 is provided, numeral 62. The parts and subassemblies are placed or loaded into the first vacuum chamber 92, numeral 64, and the first vacuum chamber is sealed and evacuated using a vacuum pump, numeral 66" (column 5, line 3-10).

Zahuta also discloses in Figure 3, "as a separate operation, preferably conducted in parallel with the preceding steps, the non-evaporative getter 50 for the dewar is placed, numeral 70, into a second vacuum chamber 110 that interconnects to the assembly chamber 108 through a fifth vacuum lock 112. The second vacuum chamber 110 is evacuated, numeral 72. The getter material is activated, numeral 74, by heating the getter material to a temperature of up to about 900.degree. C. for 10 minutes using electrodes, resistive heaters, radio frequency induction heaters, or other operable heating device. After completion of the activating, the getter material is moved to the assembly chamber 108 through the fifth vacuum lock 112 (heat shielding member)" (column 6, line 8-20). Zahuta further discloses in Figure 3, "in the assembly chamber 108, the parts, subassemblies, and getter are assembled together, numeral 76. Assembly may be accomplished by any of a variety of techniques, including for example robotic assembly,

other fully or partially automated assembly, or manual assembly as by using manipulators. The assembly is moved to a vacuum joining chamber 114 through a sixth vacuum lock 116 (load lock)" (column 6, line 21-28).

Zahuta further yet discloses in Figure 3, "in the vacuum joining chamber 114, the assembled components are joined permanently or semipermanently using any appropriate technique, numeral 78. Examples of joining techniques include a metal gasket placed between the components, an O-ring gasket placed between the components, cold metal welding of the components, electron beam welding, and laser welding. FIG. 2 shows only a single assembly chamber 108 and a single joining chamber 114, but there could be others as appropriate for the particular type of dewar assembly. For example, it might be appropriate to electron beam weld two particular components together, so a first joining chamber could be provided with an electron beam welder. Two other components might be more properly joined using laser welding, and a second joining chamber would be provided with a laser welder. The various parts and subassemblies to be joined would be moved to the appropriate joining chambers" (column 6, line 29-46).

Robinson teaches in Figure 5, "a vacuum chamber 20 that is evacuated by vacuum pump 34. There are top and bottom pressure plates (16A not shown) and 16 B respectively position to receive the top face plate 2, the substrate 6 and seal ring 4. Also within the vacuum chamber 20 is a face plate cassette 22, a seal ring cassette 24 and a substrate cassette 26. A articulating arm 38A which is a device similar to that disclosed in U.S. Pat. No. 4,891,087 sequentially retrieves a substrate 6 from the substrate cassette 26 and places it on the pressure 16b; retrieves a seal ring 4 from the seal ring cassette 24

and places it in alignment over the substrate 6. The pressure plate 16a lifts the seal ring of off the articulating arm 38a and places it on the previously position substrate 6. Finally the articulating arm 38a retrieves a face plate 2 from the face plate cassette 2 and places it in alignment with the seal ring 4. The pressure plates 16A and 16B or compressed by means of a motor drive system 50 of FIG. 6d that includes a stepper motor 21 and lever 19 that raises and lowers the pressure plates 16, a solenoid 27 through which a shaft 23 passes controls the opening and closing of the side members 44 and end members 46. The motor drive system 50 is control by the control panel 28 that includes a microprocessor (not shown)" (column 4, line 4-26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilize the articulating arms of Robinson to convey or load the substrates or faceplates into the processing system of Zahuta in order to transfer the substrates and faceplates securely and reliably in a desired atmospheric environment.

Regarding to claims 84-88, Zahuta discloses in Figure 3, "a processing system 90 is provided. The processing system 90 includes multiple vacuum chambers which are discussed in terms of their functions. A first vacuum chamber 92 is provided, numeral 62. The parts and subassemblies are placed or loaded into the first vacuum chamber 92, numeral 64, and the first vacuum chamber is sealed and evacuated using a vacuum pump, numeral 66" (column 5, line 3-10).

Zahuta also discloses in Figure 3, "After cleaning, many of the parts and components are baked in vacuum, numeral 69, in the third subchamber 98. The bakeout

temperature is typically up to about 250.degree. C. In this case, only a single bakeout subchamber 98 is shown, but there could be additional such subchambers. The bakeout removes additional adsorbed contaminants from the surfaces of the parts and components. After bakeout is complete, the parts and components are moved to the assembly chamber 108" (column 5, line 63-68 to column 6, line 1-3).

Zahuta further discloses in Figure 3, "in the assembly chamber 108, the parts, subassemblies, and getter are assembled together, numeral 76. Assembly may be accomplished by any of a variety of techniques, including for example robotic assembly, other fully or partially automated assembly, or manual assembly as by using manipulators. The assembly is moved to a vacuum joining chamber 114 through a sixth vacuum lock 116 (load lock)" (column 6, line 21-28).

Zahuta further yet discloses in Figure 3, "in the vacuum joining chamber 114, the assembled components are joined permanently or semipermanently using any appropriate technique, numeral 78. Examples of joining techniques include a metal gasket placed between the components, an O-ring gasket placed between the components, cold metal welding of the components, electron beam welding, and laser welding. FIG. 2 shows only a single assembly chamber 108 and a single joining chamber 114, but there could be others as appropriate for the particular type of dewar assembly. For example, it might be appropriate to electron beam weld two particular components together, so a first joining chamber could be provided with an electron beam welder. Two other components might be more properly joined using laser welding, and a second joining chamber would be

provided with a laser welder. The various parts and subassemblies to be joined would be moved to the appropriate joining chambers" (column 6, line 29-46).

Robinson teaches in Figure 5, "a vacuum chamber 20 that is evacuated by vacuum pump 34. There are top and bottom pressure plates (16A not shown) and 16 B respectively position to receive the top face plate 2, the substrate 6 and seal ring 4. Also within the vacuum chamber 20 is a face plate cassette 22, a seal ring cassette 24 and a substrate cassette 26. A articulating arm 38A which is a device similar to that disclosed in U.S. Pat. No. 4,891,087 sequentially retrieves a substrate 6 from the substrate cassette 26 and places it on the pressure 16b; retrieves a seal ring 4 from the seal ring cassette 24 and places it in alignment over the substrate 6. The pressure plate 16a lifts the seal ring of off the articulating arm 38a and places it on the previously position substrate 6. Finally the articulating arm 38a retrieves a face plate 2 from the face plate cassette 2 and places it in alignment with the seal ring 4. The pressure plates 16A and 16B or compressed by means of a motor drive system 50 of FIG. 6d that includes a stepper motor 21 and lever 19 that raises and lowers the pressure plates 16, a solenoid 27 through which a shaft 23 passes controls the opening and closing of the side members 44 and end members 46. The motor drive system 50 is control by the control panel 28 that includes a microprocessor (not shown)" (column 4, line 4-26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilize the articulating arms of Robinson to convey or load the substrates or faceplates into the processing system of Zahuta in order to transfer the substrates and faceplates securely and reliably in a desired atmospheric environment.

Regarding to claims 89-93 and 102, Zahuta discloses in Figure 3, "a processing system 90 is provided. The processing system 90 includes multiple vacuum chambers which are discussed in terms of their functions. A first vacuum chamber 92 is provided, numeral 62. The parts and subassemblies are placed or loaded into the first vacuum chamber 92, numeral 64, and the first vacuum chamber is sealed and evacuated using a vacuum pump, numeral 66" (column 5, line 3-10).

Zahuta also discloses in Figure 3, "after cleaning, many of the parts and components are baked in vacuum, numeral 69, in the third subchamber 98. The bakeout temperature is typically up to about 250.degree. C. In this case, only a single bakeout subchamber 98 is shown, but there could be additional such subchambers. The bakeout removes additional adsorbed contaminants from the surfaces of the parts and components. After bakeout is complete, the parts and components are moved to the assembly chamber 108" (column 5, line 63-68 to column 6, line 1-3).

Zahuta further discloses in Figure 3, "as a separate operation, preferably conducted in parallel with the preceding steps, the non-evaporative getter 50 for the dewar is placed, numeral 70, into a second vacuum chamber 110 that interconnects to the assembly chamber 108 through a fifth vacuum lock 112. The second vacuum chamber 110 is evacuated, numeral 72. The getter material is activated, numeral 74, by heating the getter material to a temperature of up to about 900.degree. C. for 10 minutes using electrodes, resistive heaters, radio frequency induction heaters, or other operable heating device. After completion of the activating, the getter material is moved to the assembly chamber 108 through the fifth vacuum lock 112 (heat shielding member)" (column 6, line 8-20).

Zahuta further yet discloses in Figure 3, "in the assembly chamber 108, the parts, subassemblies, and getter are assembled together, numeral 76. Assembly may be accomplished by any of a variety of techniques, including for example robotic assembly, other fully or partially automated assembly, or manual assembly as by using manipulators. The assembly is moved to a vacuum joining chamber 114 through a sixth vacuum lock 116 (load lock)" (column 6, line 21-28).

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substrate cassette 26. A articulating arm 38A which is a device similar to that disclosed in U.S. Pat. No. 4,891,087 sequentially retrieves a substrate 6 from the substrate cassette 26 and places it on the pressure 16b; retrieves a seal ring 4 from the seal ring cassette 24 and places it in alignment over the substrate 6. The pressure plate 16a lifts the seal ring of off the articulating arm 38a and places it on the previously position substrate 6. Finally the articulating arm 38a retrieves a face plate 2 from the face plate cassette 2 and places it in alignment with the seal ring 4. The pressure plates 16A and 16B or compressed by means of a motor drive system 50 of FIG. 6d that includes a stepper motor 21 and lever 19 that raises and lowers the pressure plates 16, a solenoid 27 through which a shaft 23 passes controls the opening and closing of the side members 44 and end members 46. The motor drive system 50 is control by the control panel 28 that includes a microprocessor (not shown)" (column 4, line 4-26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilize the articulating arms of Robinson to convey or load the substrates or faceplates into the processing system of Zahuta in order to transfer the substrates and faceplates securely and reliably in a desired atmospheric environment.

Regarding to claims 94-99 and 103-109, Zahuta discloses in Figure 3, "A gas-tight first vacuum lock 100 provides external access to the first vacuum chamber 92. A gas-tight second vacuum lock 102 separates the first sub chamber 94 from the second subchamber 96. A gas-tight third vacuum lock 104 separates the second subchamber 96 from the third subchamber 98. A gas-tight fourth vacuum lock 106 separates the third

subchamber 98 from an evacuated assembly chamber 108. The fourth vacuum lock 106 thus provides external access to the first vacuum chamber 92 at the end opposite the first vacuum lock 100" (column 5, line 23-33).

Zahuta also discloses in Figure 3, "each of the subchambers can be isolated from the other subchambers, the external environment, and the downstream assembly chamber. Each subchamber can therefore be evacuated separately from the others. An important advantage of this process is the capability to prevent contaminants produced during the processing in one of the subchambers to reach the other subchambers" (column 5, line 34-41).

Zahuta further discloses in Figure 3, "contaminants are removed from the parts and subassemblies, numeral 68. In the illustrated processing system 90, two cleaning stages are provided for illustration. There may be multiple cleaning stages because some parts and subassemblies may require different cleaning than other parts and subassemblies, and the present approach gives complete flexibility in this regard. Examples of types of cleaning operations that may be used in vacuum include plasma glow discharge cleaning, ultraviolet photon stimulated desorption, infrared heating, ultraviolet cleaning, and ion bombardment, all of which are known in the art. Again by way of example, the first sub chamber 94 might be provided with the apparatus for performing ultraviolet cleaning and the second subchamber 96 might be provided with the apparatus for performing ion bombardment. Some parts or subassemblies might be most effectively cleaned by one process but should not be exposed to the other. In these

cases, the parts or subassemblies are loaded into the cleaning subchamber 94 or 96 that is appropriate for it" (column 5, line 42-62).

However, Zahuta does not disclose a second getter-processing chamber. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have add another getter processing chamber in order to further remove the contaminants from parts and subassemblies and to accommodate the needs and requirement of different gettering process of different parts and subassemblies.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following prior art are cited to further show the state of the art of method and apparatus of manufacturing an image-displaying device.

U.S. Patent No. 6,479,944 to Lee.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalei Dong whose telephone number is (703)308-2870. The examiner can normally be reached on 8 A.M. to 5 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (703)305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

D.D.
April 14, 2003

Sandra O'Shea
Supervisory Patent Examiner
Technology Center 2800